

**Monitoring the Effects of Enhanced Air Force Training in Idaho:
Baseline Vegetation Map**

by

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Abstract

The United States Air Force Enhanced Training Range may effect ecosystem processes over large areas of the Owyhee Plateau region in southwestern Idaho. Existing spatial and tabular baseline information on the distribution, extent, and condition of vegetation is compiled to monitor the effects of training range development and use. Field reconnaissance was conducted to assist with the reconciliation of existing information sources into a common vegetation data language and an integrated spatial database. Ecological data was collected on 366 point observation plots at 28 reference sites within the study area. Existing information which was not recovered is identified. An assessment of mapping accuracy suggests that the combination of spatial information on existing vegetation and potential natural vegetation will yield a more accurate map of existing vegetation than consideration of data on existing vegetation alone.

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Introduction

The United States Air Force Enhanced Training Range may effect ecosystem processes over large areas of the Owyhee Plateau region in southwestern Idaho. Vegetative condition is a key indicator of the health of ecosystem functioning, including the viability of wildlife species. Comprehensive baseline information on the distribution, extent, and condition of vegetation and key wildlife species habitat use within the training range area will serve as a tool in the maintenance and enhancement of critical wildlife habitats and ecosystem processes.

The objective of this vegetation mapping project is to provide baseline information on the distribution, extent, and condition of vegetation on the Owyhee Plateau. This information will be used to monitor the effects of training range development and use.

Methods and Study Area

The 3.69 million acre study area is located in Owyhee and Twin Falls counties, and generally encompasses the Owyhee Plateau of southwestern Idaho (Figure 1). The Owyhee Plateau is an uplifted region; dome and block-fault geological formations are common. Rhyolites and welded tuffs are the principal rocks of the uplands. These formations occur with silicic volcanic flows, ash deposits, and wind-blown loess. The Owyhee Mountains are principally granitic. The biophysical region is deeply dissected by erosional processes. Aridisol, Entisol, Alfisol, Inceptisol and Mollisol soils occur in combination with mesic and frigid and xeric and aridic soil temperature and moisture regimes, respectively. Mean annual precipitation ranges from 7 to 15 inches. The annual distribution of precipitation is nearly even, though summers are relatively drier. Mean annual temperature ranges from 35 to 45 °F. The potential natural vegetation within the study area is principally sagebrush steppe (McNab and Avers 1994; United States Air Force 1993 and 1996).

A fair amount of information on wildlife habitats within the study area was available at the onset of the project. This information was generated through three Air Force contracts, large regional studies (ICBEMP, TNC, GAP), and through the routine work of resource management agencies. The information was developed, however, to meet a range of different objectives and using a range of different methods. A specific task of this project is to compiled this information into a common format within the Idaho Department of Fish and Game's (IDFG) geographic information system. Field reconnaissance focused on the reconciliation of these various information sources into a common vegetation data language and an integrated spatial database.

Existing spatial data for potential natural vegetation, current vegetation condition, and disturbance history was verified through field reconnaissance. Field reconnaissance occurred through a stratified stand-level sampling strategy. The study area was stratified based on major environmental factors. First to second order drainage basins representing major environmental strata were selected as reference areas for intensive stand-level sampling. Data on the existing vegetation, potential natural vegetation, ecological condition, stand seral status, structural

condition, and basic physical environmental parameters were collected for entire homogeneous stands within each of these reference areas.

Results and Conclusions

Reference Area Sampling--The study area was stratified based on major patterns in precipitation and physiography. These strata represent the major vegetation zones within the study area. Eight major vegetation zones were identified (Figure 2), ranging from salt-desert shrubland to Wyoming big sagebrush shrubland to Douglas fir forest (Table 1). Wyoming big sagebrush shrubland, low sagebrush dwarf shrub, and mountain big sagebrush shrubland vegetation zones were targeted for reference area sampling as these vegetation zones are most likely to provide key sage grouse habitats.

Reference area sampling and preliminary map field testing occurred during June - November, 1998. Ecological data was collected on 366 point observation plots at 28 reference sites within the study area. One half of these sites are designated ecological reference areas (i.e., research natural areas or preserves) that represent relatively pristine conditions. The remaining sites represent a range of different ecological conditions. Reference area sites were selected to complement, rather than duplicate existing plot data (reported by United State Air Force 1993 and 1996). The reference sites and their distribution within the major vegetation zones of the study area is summarized in Table 2. Fifty-six plant associations are identified as occurring within the area (Table 3). Plant association nomenclature follows Hironaka et al. (1983).

Collection and Summary of Existing Spatial and Tabular Data--Over 100 GIS data files concerning the study area were reviewed (summarized in Appendix 1). Five were select for further consideration and utilization: Idaho Land Cover (the 1998 revision of GAP Analysis Program vegetation coverage; Landscape Dynamics Lab 1999), NRCS SSURGO (USDA Natural Resources Conservation Service 1996), Idaho Training Range (ITR) Vegetation (United States Air Force 1993), Enhanced Training in Idaho (ETI) Vegetation (United States Air Force 1996) (the location of ITR and ETI analysis areas is indicated in Figure 2), and BLM Fire History. Numerous digital NWI maps were also located which may support mapping wetland and riparian habitats. The Idaho Land Cover GIS file was generated from LANDSAT imagery and provides information on the existing vegetative cover. The NRCS SSURGO coverage provides information on potential natural vegetation.

The Idaho Land Cover, NRCS SSURGO, ITR Vegetation, ETI Vegetation files are compiled into an initial common vegetation data language (Tables 4 - 5). This work currently possesses a bias toward upland vegetation; wetland and riparian plant associations and cover types identified by Moseley (1998) and more recent work are yet to be fully integrated into the vegetation data language.

Building An Accurate Vegetation Map--An important initial focus of the study is the corroboration and compilation of existing spatial vegetation data into a common vegetation data

language. Existing information required (but not yet recovered) to complete this task fully is:

- the point location of plot data generated for the Saylor Creek Range ecosystem analysis (Science Applications International Corporation 1996)
- point location and original plot composition and structure data generated for the ITR analysis (United States Air Force 1993)
- additional detailed information identified in Appendix 1.

Through the development of this study the issue of the accuracy of existing spatial vegetation data and the potential accuracy of vegetation map products generated by this study have arisen as a principal concern. Landscape Dynamics Lab (1999) estimates the Idaho Land Cover as possessing an accuracy of 69.3 percent (with a range 63.6 to 79.3 percent) for southern Idaho. This accuracy value reflects allowance for acceptable errors and is for the work developed by Homer et al. (1998) (for southern Idaho) before it was merged with the work developed by Redmond et al. (1997) (for northern Idaho). During the merge process the classification of existing vegetation reported by Homer et al. (1998) was revised to match the classification developed by Redmond et al. (1997) (Landscape Dynamic Lab 1999). Considerable information loss for the Owyhee Plateau area may have occurred during this merge process.

I conducted an independent accuracy assessment to evaluate the level of improvement of spatial data for existing vegetative cover generated through the use of spatial data for potential natural vegetation and disturbance history. Using point observation data collected in 1998 the Idaho Land Cover shows, on a site-by-site basis, a mean accuracy of 42 percent (range, 0 - 85 percent; standard deviation, 25 percent) with no allowance for acceptable error. An intersection of the Idaho Land Cover, NRCS SSURGO, and BLM Fire History coverages and the subsequent blind¹ decision-rule-based reassignment of the cover type classes generated a (statistically) significant 36 percent improvement in the mapping of existing vegetation. The mean accuracy of the intersected coverage is 57 percent (range, 18 to 89 percent; standard deviation, 18 percent) using blind decision rules and with no allowance for acceptable error. This result allows the reasonable conclusion that the combination of spatial information on existing vegetation and potential natural vegetation will yield a more accurate map of existing vegetation than consideration of data on existing vegetation alone.

¹ The reinterpretation was blind in the sense that only a general knowledge of the performance of each coverage involved in the intersection was utilized, rather than the site specific knowledge represented by the actual point data.

Literature Cited

- Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Office of Biological Services, Fish and Wildlife Service. 103 pp.
- Hironaka, M., M. A. Fosberg, and A. H. Winward. 1983. Sagebrush-grass habitat types of southern Idaho. Forestry, Wildlife, and Range Experiment Station Bulletin Number 15, University of Idaho, Moscow. 44 pp.
- Homer et al. 1998. Idaho/Western Wyoming Landcover Classification. Remote Sensing/GIS Laboratories, Utah State University, Logan.
- Landscape Dynamics Lab. 1999. GRID IDVEG -- Idaho Land Cover. Idaho Cooperative Fish and Wildlife Research Unit, Moscow.
- Moseley, R. K. 1998. Riparian and wetland community inventory of 14 reference areas in southwestern Idaho. Conservation Data Center, Idaho Department of Fish and Game, Technical bulletin no. 98-5, prepared for Lower Snake River District, Bureau of Land Management. Order no. 1422-D010-P97-0116. 52 pp. plus appendices.
- Redmond et al. 1997. Current Vegetation Map of Northern Idaho and Western Montana. Wildlife Spatial Analysis Lab, Montana Cooperative Fish and Wildlife Research Unit, Missoula.
- Science Applications International Corporation. 1996. Ecosystem survey of Mountain Home Air Force Base, Saylor Creek Range, and associated restricted airspace R-3202A. Data compendium: field notes, data sheets, and photographic slides. Unpublished report prepared for United States Air Force.
- USDA Natural Resources Conservation Service. 1996. Soil survey geographic (SSURGO) data base for Owyhee County area, Idaho. USDA Natural Resources Conservation Service, Fort Worth.
- United States Air Force. 1993. Idaho Training Range, Biological Resources Technical Support Document. Air Combat Command, United States Air Force.
- United States Air Force. 1996. Ecosystem survey of Mountain Home Air Force Base, Saylor Creek Range, and associated restricted airspace R-3202A. Final Report. 79 pp. plus appendices.

Figure 1. Location of the study area. The inset map shows the location of the study area in southwestern Idaho. Two major Air Force analysis areas, ETI and North and South ITR are also indicated. The outline of USGS 1:24,000 scale quadrangles provide geographic reference.

Figure 2. The distribution of major vegetation zones within the study area. Vegetation zones are shown with the location of point observations and reference sampling sites.

Table 1. Summary of the extend of major vegetation zones of the Owyhee Uplands.

Vegetation Zone	Percent
Douglas fir forest	3.3
Low sagebrush dwarf shrub mosaic	15.3
Low sagebrush dwarf shrub mosaic - sparse	5.7
Low sagebrush dwarf shrub mosaic - wet meadow	3.3
Mountain big sagebrush shrubland	4.2
Salt desert shrubland	13.6
Western juniper woodland	11.4
Wyoming big sagebrush shrubland - dry	12.5
Wyoming big sagebrush shrubland - very dry	11.0
Wyoming big sagebrush shrubland - lacustrine sedimentary	19.6

Table 2. Summary of reference areas sampled. The presence of major vegetation zones within each area is indicated by a check mark (✓).

Reference Area	Number of Points	Wyoming big sagebrush shrubland - very dry	Salt desert shrubland	Wyoming big sagebrush shrubland - dry	Wyoming big sagebrush shrubland - lacustrine sedimentary	Low sagebrush dwarf shrub mosaic	Low sagebrush dwarf shrub mosaic - wet meadow	Low sagebrush dwarf shrub mosaic - sparse	Mountain big sagebrush shrubland	Western juniper woodland
Badlands	22					✓		✓		✓
Bald Mountain	19			✓		✓				
Beaver Charlie Dry Lake	7			✓						
Big Spring Basin	5					✓	✓		✓	
Blackstone Reservoir Road	2	✓	✓	✓						
Buncel Basin	3					✓	✓		✓	
Colt	14			✓						
Cottonwood Creek	31			✓		✓				
Crab Creek Basin	6					✓	✓		✓	
Duncan Creek	7									
Halogeten Flat	2			✓						
Hells Creek	27					✓				✓
Little Jacks Basin	14					✓	✓		✓	
Little Jacks Creek	32			✓						

Reference Area	Number of Points	Wyoming big sagebrush shrubland - very dry	Salt desert shrubland	Wyoming big sagebrush shrubland - dry	Wyoming big sagebrush shrubland - lacustrine sedimentary	Low sagebrush dwarf shrub mosaic	Low sagebrush dwarf shrub mosaic - wet meadow	Low sagebrush dwarf shrub mosaic - sparse	Mountain big sagebrush shrubland	Western juniper woodland
Lone Juniper Creek	11					✓				
Mud Flat Highlands	6					✓				
N. Fk. Juniper Woodland	14					✓		✓		
Nanny Creek	6	✓		✓						
Nit Creek Road	11	✓		✓						
North Hill Pasture	10			✓						
Pleasant Valley Table	23					✓	✓	✓		
Spring Butte	12			✓						
Spring Creek Basin	19			✓						
Spring Creek Plateau	5			✓						
Summit Flat	16					✓	✓			
Triplet Butte	37					✓				
Walcott Basin Ridge	6	✓		✓						
Wickahoney	7			✓						
Total (28 sites)	366	4	1	15	0	14	6	3	4	2

Table 3. Plant associations observed within the Owyhee Plateau study area. Association (and series) documented by materials available at Idaho Conservation Data Center (CDC) are indicated by a check mark (✓). Other associations are identified by NRCS as occurring within the study area or are provisionally identified as occurring within the area but have not been fully documented.

PLANT ASSOCIATION	RECOGNIZED BY CDC	ACRONYM
ACER GLABRUM/HOLODISCUS DUMOSUS-RIBES CEREUM		ACGL/HODU-RICE
ARTEMISIA ARBUSCULA SERIES	✓	ARAR
ARTEMISIA ARBUSCULA/AGROPYRON SPICATUM	✓	ARAR/AGSP
ARTEMISIA ARBUSCULA/FESTUCA IDAHOENSIS	✓	ARAR/FEID
ARTEMISIA ARBUSCULA/FESTUCA IDAHOENSIS	✓	ARAR/FEID
ARTEMISIA ARBUSCULA/POA SECUNDA	✓	ARAR/POSE
ARTEMISIA ARBUSCULA/STIPA THURBERIANA		ARAR/STTH
ARTEMISIA CANA SERIES	✓	ARCA
ARTEMISIA CANA/FESTUCA IDAHOENSIS	✓	ARCA/FEID
ARTEMISIA CANA/POA		ARCA/POA
ARTEMISIA CANA/POA SECUNDA		ARCA/POSE
ARTEMISIA LONGILOBA/FESTUCA IDAHOENSIS	✓	ARLO/FEID
ARTEMISIA NOVA/AGROPYRON SPICATUM	✓	ARNO/AGSP
ARTEMISIA NOVA/FESTUCA IDAHOENSIS	✓	ARNO/FEID
ARTEMISIA NOVA/POA SECUNDA	✓	ARNO/POSE
ARTEMISIA NOVA/STIPA THURBERIANA		ARNO/STTH
ARTEMISIA PAPPOSA SERIES	✓	ARPA
ARTEMISIA PAPPOSA/POA SECUNDA		ARPA/POSE
ARTEMISIA TRIDENTATA TRIDENTATA SERIES	✓	ARTRT
ARTEMISIA TRIDENTATA TRIDENTATA/AGROPYRON SPICATUM	✓	ARTRT/AGSP
ARTEMISIA TRIDENTATA TRIDENTATA/ELYMUS CINEREUS	✓	ARTRT/ELCI
ARTEMISIA TRIDENTATA TRIDENTATA/FESTUCA IDAHOENSIS	✓	ARTRT/FEID
ARTEMISIA TRIDENTATA TRIDENTATA/ORYZOPSIS HYMENOIDES		ARTRT/ORHY
ARTEMISIA TRIDENTATA TRIDENTATA/STIPA COMATA	✓	ARTRT/STCO
ARTEMISIA TRIDENTATA VASEYANA SERIES	✓	ARTRV
ARTEMISIA TRIDENTATA VASEYANA-SYMPHORICARPOS OREOPHILUS/BROMUS CARINATUS	✓	ARTRV-SYOR/BRCA
ARTEMISIA TRIDENTATA VASEYANA-SYMPHORICARPOS OREOPHILUS/FESTUCA IDAHOENSIS	✓	ARTRV-SYOR/FEID

PLANT ASSOCIATION	RECOGNIZED BY CDC	ACRONYM
ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM	✓	ARTRV/AGSP
ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS	✓	ARTRV/FEID
ARTEMISIA TRIDENTATA WYOMINGENSIS SERIES	✓	ARTRW
ARTEMISIA TRIDENTATA WYOMINGENSIS/AGROPYRON SPICATUM	✓	ARTRW/AGSP
ARTEMISIA TRIDENTATA WYOMINGENSIS/FESTUCA IDAHOENSIS	✓	ARTRW/FEID
ARTEMISIA TRIDENTATA WYOMINGENSIS/ORYZOPSIS HYMENOIDES		ARTRW/ORHY
ARTEMISIA TRIDENTATA WYOMINGENSIS/POA SECUNDA	✓	ARTRW/POSE
ARTEMISIA TRIDENTATA WYOMINGENSIS/SITANION HYSTRIX	✓	ARTRW/SIHY
ARTEMISIA TRIDENTATA WYOMINGENSIS/STIPA THURBERIANA	✓	ARTRW/STTH
ARTEMISIA TRIDENTATA/ARTEMISIA TRIDENTATA VASEYANA/AGROPYRON SPICATUM		CELE/ARTRV/AGSP
ATRIPLEX CONFERTIFOLIA SERIES	✓	ATCO
ATRIPLEX CONFERTIFOLIA-ARTEMISIA SPINESCENS/ORYZOPSIS HYMENOIDES-STIPA THURBERIANA		ATCO-ARSP/ORHY-STTH
ATRIPLEX CONFERTIFOLIA/SITANION HYSTRIX		ATCO/SIHY
CEANOTHUS VELUTINUS		CEVE
CERCOCARPUS LEDIFOLIUS SERIES	✓	CELE
CERCOCARPUS LEDIFOLIUS/ARTEMISIA TRIDENTATA	✓	CELE/ARTRV
CERCOCARPUS LEDIFOLIUS/FESTUCA IDAHOENSIS		CELE/FEID
CERCOCARPUS LEDIFOLIUS/SYMPHORICARPOS OREOPHILUS	✓	CELE/SYOR
CERCOCARPUS LEDIFOLIUS/SYMPHORICARPOS OREOPHILUS/FESTUCA IDAHOENSIS		CELE/SYOR/FEID
DANTHONIA CALIFORNICA SERIES	✓	DACA
ELEOCHARIS PAUCIFLORA SERIES	✓	ELPA
EUROTIA LANATA/ORYZOPSIS HYMENOIDES		EULA/ORHY
GLOSSOPETALON NEVADENSE SERIES	✓	GLNE
GLOSSOPETALON NEVADENSE/AGROPYRON SPICATUM	✓	GLNE/AGSP
HAPLOPAPPUS ACAULIS SERIES	✓	HAAC
HAPLOPAPPUS NANUS SERIES	✓	HANA
HAPLOPAPPUS NANUS/POA SECUNDA		HANA/POSE
JUNIPERUS OCCIDENTALIS SERIES	✓	JUOC
JUNIPERUS OCCIDENTALIS/AGROPYRON SPICATUM	✓	JUOC/AGSP
JUNIPERUS OCCIDENTALIS/ARTEMISIA ARBUSCULA/AGROPYRON SPICATUM		JUOC/ARAR/AGSP

PLANT ASSOCIATION	RECOGNIZED BY CDC	ACRONYM
JUNIPERUS OCCIDENTALIS/ARTEMISIA ARBUSCULA/FESTUCA IDAHOENSIS	✓	JUOC/ARAR/FEID
JUNIPERUS OCCIDENTALIS/ARTEMISIA TRIDENTATA VASEYANA	✓	JUOC/ARTRV
JUNIPERUS OCCIDENTALIS/ARTEMISIA TRIDENTATA VASEYANA/FESTUCA IDAHOENSIS		JUOC/ARTRV/FEID
JUNIPERUS OCCIDENTALIS/FESTUCA IDAHOENSIS	✓	JUOC/FEID
JUNIPERUS OCCIDENTALIS/SYMPHORICARPOS OREOPHILUS/FESTUCA IDAHOENSIS		JUOC/SYOR/FEID
JUNIPERUS SCOPULORUM/ARTEMISIA TRIDENTATA WYOMINGENSIS/AGROPYRON SPICATUM		JJSC/ARTRW/AGSP
JUNIPERUS SCOPULORUM/ARTEMISIA TRIDENTATA WYOMINGENSIS/FESTUCA IDAHOENSIS		JJSC/ARTRW/FEID
LEPIDIUM DAVISII SERIES	✓	LEDA
POPULUS TREMULOIDES	✓	POTR
POPULUS TREMULOIDES/SALIX SCOULERIANA	✓	POTR/SASC
PSEUDOTSUGA MENZIESII/SYMPHORICARPOS OREOPHILUS	✓	PSME/SYOR
PURSHIA TRIDENTATA/FESTUCA IDAHOENSIS	✓	PUTR/FEID
SARCOBATUS VERMICULATUS/ELYMUS CINEREUS	✓	SAVE/ELCI
STIPA OCCIDENTALIS SERIES	✓	STOCC

Table 4. Crosswalk of ETI vegetation mapping units to plant associations and cover types within the Owyhee Upland study area.

Mapping Unit	Plant Association	Cover Type
AGRICULTURE	UNASSIGNED	Agriculture
ANNUAL GRASSLAND	UNASSIGNED	Shrub/Steppe Annual Grass-Forb
ASPEN	POTR	Aspen
BARE	UNASSIGNED	Disturbed-1
BLUEBUNCH WHEATGRASS	UNASSIGNED	Perennial Grass Slope
CANYON SHRUBLANDS	UNASSIGNED	Bitterbrush
CHEATGRASS	UNASSIGNED	Shrub/Steppe Annual Grass-Forb
CRESTED WHEATGRASS	UNASSIGNED	Perennial Grassland
INTERMEDIATE WHEATGRASS	UNASSIGNED	Perennial Grassland
LOW SAGEBRUSH	ARAR	Low Sagebrush
RABBITBRUSH	UNASSIGNED	Rabbitbrush
RIPARIAN	UNASSIGNED	Shrub Dominated Riparian
SAND DUNES	UNASSIGNED	Sand Dune
SANDBERG BLUEGRASS	UNASSIGNED	Perennial Grass Slope
SHADSCALE SALTBRUSH	ATCO	Salt-desert Shrub
STIPA	UNASSIGNED	Perennial Grass Slope
TALL SHRUB (WILLOW/ROSA)	UNASSIGNED	Shrub Dominated Riparian
TUMBLE MUSTARD	UNASSIGNED	Shrub/Steppe Annual Grass-Forb
VERNAL POOL	UNASSIGNED	Mixed Barren Land
WATER	WATER	Water
WYOMING BIG SAGEBRUSH	ARTRW	Basin & Wyoming Big Sagebrush
WYOMING BIG SAGEBRUSH/BLUEBUNCH WHEATGRASS	ARTRW/AGSP	Basin & Wyoming Big Sagebrush
WYOMING BIG SAGEBRUSH/GOLDEN CURRENT	ARTRW	Basin & Wyoming Big Sagebrush

Mapping Unit	Plant Association	Cover Type
AGRICULTURE	UNASSIGNED	Agriculture
WYOMING BIG SAGEBRUSH/LOW SAGEBRUSH	ARTRW	Basin & Wyoming Big Sagebrush

Table 5. Crosswalk of ITR vegetation mapping units to plant associations and cover types within the Owyhee Upland study area.

Mapping Unit	Plant Association	Cover Type
Agriculture/pasture	UNASSIGNED	Agriculture
Alkali sagebrush/ Idaho fescue	ARCA/FEID	Low Sagebrush
Barrens	UNASSIGNED	Mixed Barren Land
Basin Big Sagebrush/Bluebunch wheatgrass	ARTRW/AGSP	Basin & Wyoming Big Sagebrush
Canyon shrub riparian	UNASSIGNED	Shrub Dominated Riparian
Grasslands	UNASSIGNED	Perennial Grass Slope
Juniper/Wyoming big sagebrush-low sagebrush/Idaho fescue	JUOC/ARAR/FEID	Western Juniper
Juniper/Wyoming big sagebrush/Bluebunch wheatgrass	JUOC/AGSP	Western Juniper
Juniper/mountain big sagebrush	JUOC/ARTRV	Western Juniper
Juniper/mountain shrub	JUOC/SYOR/FEID	Western Juniper
Low sagebrush/ Idaho fescue	ARAR/FEID	Low Sagebrush
Low sagebrush/ Idaho fescue/bareground	ARAR/FEID	Low Sagebrush
Low sagebrush/ Idaho fescue/rock	ARAR/FEID	Low Sagebrush
Low sagebrush/Idaho Fescue/Juniper/Mountain big sagebrush/mesic meadow - ARAR/FEID	ARAR/FEID	Low Sagebrush
Low sagebrush/Idaho Fescue/Juniper/Mountain big sagebrush/mesic meadow - JUOC/ARTRV	JUOC/ARTRV	Western Juniper
Mesic meadows	UNASSIGNED	Graminoid or Forb Dominated Riparian

Mapping Unit	Plant Association	Cover Type
Mima Mounds - Low sagebrush/ Idaho fescue	ARAR/FEID	Low Sagebrush
Mima Mounds - Wyoming big sagebrush/bluebunch wheatgrass/Idaho fescue	ARTRW/AGSP	Basin & Wyoming Big Sagebrush
Mountain mahogany woodlands	CELE	Curlleaf Mountain Mahogany
Perennial bunchgrass seedings	UNASSIGNED	Perennial Grassland
Rabbitbrush/Wyoming big sagebrush	ARTRW	Rabbitbrush
Reservoirs	WATER	Water
Silver sagebrush	ARCA/FEID	Silver Sagebrush
Talus	UNASSIGNED	Exposed Rock
Vernal pools	UNASSIGNED	Mixed Barren Land
Wyoming big Sagebrush/Idaho fescue	ARTRW/FEID	Basin & Wyoming Big Sagebrush
Wyoming big sagebrush/Bluebunch wheatgrass/Slickspots - ARTRW/AGSP/FEID	ARTRW/AGSP	Basin & Wyoming Big Sagebrush
Wyoming big sagebrush/Bluebunch wheatgrass/Slickspots - bareground	UNASSIGNED	Mixed Barren Land
Wyoming big sagebrush/Idaho Fescue/Sandberg's bluegrass	ARTRW/FEID	Basin & Wyoming Big Sagebrush
Wyoming big sagebrush/Sandberg's bluegrass/Idaho fescue	ARTRW/FEID	Basin & Wyoming Big Sagebrush
Wyoming big sagebrush/bluebunch wheatgrass/Idaho fescue	ARTRW/AGSP	Basin & Wyoming Big Sagebrush

Table 6. Crosswalk of SCR vegetation mapping units to plant associations and cover types within the Owyhee Upland study area.

Mapping Unit	Plant Association	Cover Type
AGRICULTURE	UNASSIGNED	Agriculture
ANNUAL GRASSLAND	UNASSIGNED	Shrub/Steppe Annual Grass-Forb
BARE	UNASSIGNED	Disturbed-1
CANYON SHRUBLANDS	UNASSIGNED	Bitterbrush
CHEATGRASS/SANDBERG'S BLUEGRASS	UNASSIGNED	Shrub/Steppe Annual Grass-Forb
CRESTED WHEATGRASS	UNASSIGNED	Perennial Grassland
SAND DUNES	UNASSIGNED	Sand Dune
SANDBERG'S BLUEGRASS	UNASSIGNED	Perennial Grass Slope
SHADSCALE SALTBRUSH	ATCO	Salt-desert Shrub
STIPA	UNASSIGNED	Perennial Grass Slope
VERNAL POOL	UNASSIGNED	Mixed Barren Land
WATER	WATER	Water
WYOMING BIG SAGEBRUSH	ARTRW	Basin & Wyoming Big Sagebrush

Appendix 1. Summary of Vegetation Spatial and Tabular Data Related to Air Force Environmental Analyses.

ENHANCED TRAINING IDAHO (ETI)

Four GIS import files related to the ETI Environmental Impact Statement (EIS) were provided by Ogden Environmental and Energy Services: Fire.e00, Etiveg1.e00, Etiveg2.e00, and Wetlands.e00. The content and information structure of these files is described below.

FIRE

Description: Coverage of fire events within the ETI study area. Polygons correspond to those of the BLM fire history coverage with the exception of fires that pre-date the BLM coverage.

Scale: unknown

Information sources: BLM fire history maps (Bruneau and Jarbidge Resource Areas).

Size: 238 polygons

Data structure:

Field	Data type	Size	Description
Fire#	A	5	Machine generated unique identifier.
Fire-id	A	7	Unique polygon identifier with no other apparent information (208 values).
Code	A	4	Fire history code ² .
Desc	A	26	Description of fire history.
Ea	A	2	Coded value (burned versus unburned).

ETIVEG1

Description: Vegetation mapping of three alternative training range sites: Clover Butte, Grasmere, and Juniper Butte.

Scale: 1:24,000.

²Codes are as follows:

Code	Desc	Ea
10	NOT BURNED	9
20	PRE-1990	1
30	POST-1990	1
40	PRE AND POST-1990	1
50	1996/POST-1990	1
60	1996/PRE-1990	1
70	1996 BURN	1
80	PROBABLE FIRE-DATE UNKNOWN	1

Information sources: Aerial photography, soil survey data, field sample data.

Size: 99 polygons

Data structure:

Field	Data type	Size	Description
Etiveg1#	A	8	Machine generated unique identifier.
Etiveg1-id	A	10	User generated identifier; no apparent information content
Vegid	A	5	Numeric values (stand numbers from original delineation?) (78 values)
B1	A	4	Dominant shrub species.
B1c	A	3	The canopy cover of the dominant shrub species. Cover class values ³ (6 - 8).
B1h	A	3	The canopy height of the dominant shrub species. Coded values ⁴ .
B2	A	4	Sub-dominant shrub species. Two polygons are assigned values.
B2c	A	3	The canopy cover of the sub-dominant shrub species. Cover class values (1, 2).
B2h	A	3	The canopy height of the dominant shrub species. Values coded as for B1h
G1	A	4	Dominant grass species.
G1c	A	3	The canopy cover of the dominant grass species. Cover class values.
G1h	A	3	The canopy height of the dominant grass species. Coded values ⁵ .
G2	A	4	Sub-dominant grass species. Twenty-nine polygons are assigned values.
G2c	A	3	The canopy cover of the sub-dominant grass species. Cover class values.
G2h	A	3	The canopy height of the dominant shrub species. Values coded as for G1h.
W1	A	4	The dominant weed species. Four polygons are assigned values.

³Cover class values:

⁴Shrub canopy height classes:

Code	Height Class
A	
B	
C	
D	
D+	

⁵Grass canopy height classes:

Code	Height Class
EA	
EB	
EC	

Field	Data type	Size	Description
W1c	A	3	The canopy cover of the dominant weed species. Cover class values.
W1h	A	3	The canopy height of the dominant weed species. Values coded as for G1h.
Other	A	5	Other cover components. Values present: BARE, MOSS, RI (riparian).
Vegall	A	29	The concatenation of values for shrub and grass cover and structure.
Vegcode	A	9	Abbreviated for Vegtype label.
Vegtype	A	42	Descriptive vegetation labels ⁶ .
Alt	A	8	The alternative training range site in which the polygon lies.

ETIVEG2

Description: Vegetation coverage of the entire ETI study area.

Scale: 1:24,000.

Information sources: Aerial photography, soil survey data, field sample data.

Size: 887 polygons.

Data structure:

Attribute	Data type	Size	Description
Etiveg2#	A	8	Machine generated unique identifier.
Etiveg2-id	A	10	User generated identifier; no apparent information content.
Vegid	A	5	Numeric values (stand numbers from original delineation?).

⁶Vegetation types

Vegcode	Vegtype
AGCR	CRESTED WHEATGRASS
AGIN	INTERMEDIATE WHEATGRASS
AGSP	BLUEBUNCH WHEATGRASS
ARAR	LOW SAGEBRUSH
ARTR	WYOMING BIG SAGEBRUSH
ARTR/AGSP	WYOMING BIG SAGEBRUSH/BLUEBUNCH WHEATGRASS
ARTR/ARAR	WYOMING BIG SAGEBRUSH/LOW SAGEBRUSH
ARTR/RIAU	WYOMING BIG SAGEBRUSH/GOLDEN CURRENT
BARE	BARE
BRTE	CHEATGRASS
CHRY	RABBITBRUSH
RI	RIPARIAN
SIAL	TUMBLE MUSTARD
TS	TALL SHRUB (WILLOW/ROSA)

Attribute	Data type	Size	Description
B1	A	4	The dominant shrub species.
B1c	A	3	The canopy cover of the dominant shrub species. Cover class values ⁷ .
B1h	A	3	The canopy height of the dominant shrub species ⁸ .
B2	A	4	The sub-dominant shrub species.
B2c	A	3	The canopy cover of the sub-dominant shrub species. Cover class values.
B2h	A	3	The canopy height of the sub-dominant shrub species.
B3	A	4	The second sub-dominant shrub species.
B3c	A	3	The canopy cover of the second sub-dominant shrub species. Cover class values.
B3h	A	3	The canopy height of the second sub-dominant shrub species.
G1	A	4	The dominant grass species
G1h	A	3	The canopy height of the dominant grass species.
G2	A	4	The first sub-dominant grass species.
G2h	A	3	The canopy height of the first sub-dominant grass species.
G3	A	4	The second sub-dominant grass species.
G3h	A	3	The canopy height of the second sub-dominant grass species.
G4	A	4	The third sub-dominant grass species.
G4h	A	3	The canopy height of the third sub-dominant grass species.

⁷Cover class values:

Class	Range
1	0 - 5 percent
2	6 - 15
3	16 - 25
4	≥ 26 percent

⁸Canopy height classes:

Class	Range
A	
B	
C	
C+	
D	
D+	

Attribute	Data type	Size	Description
G5	A	4	The fourth sub-dominant grass species.
G5h	A	3	The canopy height of the fourth sub-dominant grass species.
Other	A	5	Other cover components including agriculture, bare ground, vernal pools, and water.
Vegall	A	46	The concatenation of values for shrub and grass cover and structure.
Vegcode	A	7	Abbreviated code for Vegtype.
Vegtype	A	23	The vegetation type label ⁹ .

WETLANDS

Description: Partial delineation of wetlands within the ETI study area.

Scale: 1:24,000.

Information sources: National Wetlands Inventory (NWI) maps.

Size: 32 polygons.

Data structure:

⁹Vegetation types and abbreviated codes are as follows:

Code	Vegetation Type
AG	AGRICULTURE
AGCR	CRESTED WHEATGRASS
AGIN	INTERMEDIATE WHEATGRASS
AGSP	BLUEBUNCH WHEATGRASS
ANGR	ANNUAL GRASSLAND
ARAR	LOW SAGEBRUSH
ARTR	WYOMING BIG SAGEBRUSH
ATCO	SHADSCALE SALTBRUSH
BARE	BARE
CHRY	RABBITBRUSH
CW	CANYON SHRUBLANDS
POSE	SANDBERG BLUEGRASS
POTR	ASPEN
RI	RIPARIAN
SD	SAND DUNES
STSP	STIPA
VP	VERNAL POOL
WA	WATER

Field	Data type	Size	Description
Wetlands#	A	9	Machine generated unique identifier.
Wetlands-id	A	11	User generated identifier; no apparent information content.
Nwitype	A	7	NWI feature type; polygon or linear.

SAYLOR CREEK RANGE (SCR)

One GIS file was provide by SAIC concerning the Ecosystem Survey of Mountain Home Air Force Base, Saylor Creek Range, and Associated Restricted Airspace R3202A (United States Air Force 1996). The content and structure of this file (Scrveg.e00) is summarized below. One tabular data file containing ecology plot data is on hand. Additional files of potential interest (listed in Table 4-9, page 61 in United States Air Force 1996) are for fires, plant survey plots, and jurisdictional wetlands. Information regarding these coverages is summarized as follows:

Layer	File Name	Data Type	Description	Source
Fires	FIRE_79 FIRE_80 FIRE_81 FIRE_82 FIRE_83 FIRE_84 FIRE_85 FIRE_87 FIRE_92	polygon	Eleven layers, one for each year in which fires burned, showing boundaries of each burn	Burned areas were delineated on 1:24000 quadrangles by SAIC and were then manually digitized.
Fire	ORIG_79 ORIG_80 ORIG_81 ORIG_82 ORIG_83 ORIG_84 ORIG_85 ORIG_86 ORIG_87 ORIG_92	polygon	Point of origin of fires by year.	Origins were located on 1:24000 quadrangles and manually digitized by SAIC.
Jurisdictional Wetlands	No file is identified in Appendix E, though listed in Table 4.9	polygon	Boundaries of identified wetlands.	NWI maps (page 44).
Plant Survey Plots	PLANT_PLT S	points	Locations of 129 vegetation data plots	Survey plots were digitized off 1:24000 quadrangles by SAIC.

SCRVEG

Description: Vegetation map of Sailor Creek Range (SCR) and Restricted Airspace R-3202A. Map was delineated on 1:24000 quadrangles using true color aerial photography by Science Applications International Corporation (United States Air Force 1996). Classification of mapping units was supported by composition and structure data collected (June 2 - July 24, 1994) on 129 ecology plots located within SCR (including the exclusive use area [EUA]).

Scale: 1:24000.

Information Source: plot data and aerial photography.

Size: 351 polygons.

Data structure:

Field	Data type	Size	Description
Scrveg#	A	7	Machine generated unique identifier.
Scrveg-id	A	9	User generated identifier; no apparent information content.
Vegtype	A	31	Vegetation mapping unit label ¹⁰ .

PCTYPE2

Description: Plant composition data for 125 ecology plots located within the SCR study area. Data was collected 6/2 - 7/24/94. Plots were stratified-random located within polygons of a provisional vegetation mapping. PCTYPE2 is in the Cornell Ecology Program FORTRAN data matrix format. The data was reformatted here into a relational database file structure (as described below). Additional data for the plots (quad name, legal location, elevation, canopy height, and the cover of non-vascular components) are in the file titled PCTYPE1.WK1 and printed in Science Applications International Corporation (1996).

Information Source: plot data collected by SAIC.

Size: 125 plots, 45 species, 838 records (plot/species couplets).

Data Structure:

¹⁰Vegetation mapping units:

AGRICULTURE
 ANNUAL GRASSLAND
 BARE
 CANYON SHRUBLANDS
 CHEATGRASS/SANDBERG'S BLUEGRASS
 CRESTED WHEATGRASS
 SAND DUNES
 SANDBERG'S BLUEGRASS
 SHADSCALE SALTBRUSH
 STIPA
 VERNAL POOL
 WATER
 WYOMING BIG SAGEBRUSH

Field	Data type	Size	Description
Plot id	A	7	Unique identifier.
Species	A	4	Plant species code.
Cover	N		Ocular estimate of absolute percent foliar cover.

Idaho Training Range (ITR)

The study area for the delineation of vegetation included North ITR, South ITR, and the Consolidated Training Range (CTR) restricted air spaces and associated canyons. Reconnaissance data were collected in fall 1991 and summer 1992 to provide initial information on the distribution of plant communities within the study area.

A preliminary vegetation map was created at the scale 1:19,000 using 1983 high-altitude color infrared aerial photography as a base. Preliminary Natural Resources Conservation Service (NRCS) soils maps and 1989 and 1991 (1:24,000) true color aerial photography were also referenced.

Vegetation structure and composition data were collected on 112 ecology plots. The 0.1 acre plots were located subjectively to verify vegetation and describe mapping units. The final vegetation mapping product involved 28 vegetation mapping units.

Wetland field surveys focused on sites that would receive ground disturbance through implementation of proposed alternatives (e.g., proposed target areas, emitter sites, roads, and maintenance facilities). NWI maps were verified or revised.

SAIC provided approximately 110 GIS coverages related to vegetation, soils, and wetlands within the ITR study areas. The content and origin of these files is summarized as follows as (1) unknown, (2) NRCS draft soils maps, (3) NWI maps, (4) vegetation maps. The theme MHPLS2 (points and arcs) contains public land survey coverage for the ITR study area.

Files of Unknown Content and Origin

113-111P	113-117P	129-13P	MHVEG	BSS
113-113P	127-163P	129-15P	BES	CRS
113-115P	129-11P	129-17P	BESW	TR
				WFS

NRCS Draft Soil Maps

The following coverages are largely replaced by the recent release of the NRCS SSURGO coverage. Each of the following coverage represents an individual USGS quadrangle. The coverage, SOILITR, is of polylines and covers the entire study area.

BRACE_SL	CRAB_SL	DRDSL
BSPRING_SL	DICKRIDGE_SL	FOUR_SL
BULLC_SL	DICKSHOOT_SL	FRY_SL
CASTRO_SL		GRASSY_SL
CLOVER_SL		HURRY_SL
COYOTE_SL		JARVIS_SL

JUNIPER_SL
 LOST_SL
 PIUTE_SL
 PIUTW_SL

PLEASV_SL
 RED_SL
 SHOOFLY_SL
 SLACK_SL
 SMITH_SL

SPRING_SL
 WAGON_SL
 WICKIUP_SL

Following is a representative example of the data content of these files:

Field	Data type	Size	Description
Brace_sl#	A	9	Machine generated unique identifier.
Brace_sl-id	A	11	User generated identifier (with no apparent order or information content).
Data	A	4	NRCS soil mapping unit code (relation to other information currently unknown).

NWI Maps

The following coverages are digitized NWI maps. The coverages represent individual USGS quadrangles. These are polygon files with the except of a few files that are point files (as indicated by an asterisk [*] below). The coverage, WETITR, is a polyline file that covers the entire mapping area.

BRACE_WI
 BSPRING_WI
 BULLC_WI
 CASTRO_WI
 CLOVER_WI*
 COYOTE_WI
 CRAB_WI*
 DICKRIDGE_WI
 DICKSHOOT_WI

FOUR_WI
 FRY_WI
 GRASSY_WI
 HURRY_WI
 JARVIS_WI
 JUNIPER_WI
 LOST_WI*
 PIUTE_WI
 PIUTW_WI

PLEASV_WI*
 RED_WI
 SHOOFLY_WI
 SLACK_WI
 SMITH_WI
 SPRING_WI
 WAGON_WI*
 WICKIUP_WI

Following is a representative example of the data content of these files:

Field	Data type	Size	Description
Brace_wi#	A	9	Machine generated unique identifier.
Brace_wi-id	A	11	User generated identifier (with no apparent order or information content).
Wcode	A	7	NWI Cowardin code (Cowardin et al. 1979).
Wcode1	A	6	Unknown content (primarily empty field). Perhaps corrected NWI codes.

Vegetation Maps

BURND (point file)

Description: Point locations of wildfires within the ITR study area.

Scale: unknown.

Information source: Boise District, Bureau of Land Management.

Size: 80 points.

Data structure:

Field	Data type	Size	Description
Burnd#	A	6	Machine generated unique identifier.
Burnd-id	A	8	User generated identifier; nine values are recognized, their information content is unknown.

BURND (polygon file)

Description: Areas burned by wildfires within the ITR study area.

Scale: 1:24,000?.

Information source: Boise District, Bureau of Land Management. The following files appear to have been merged into the BURND coverage:

BA1	BA14	BA19	BA23	BA6
BA10	BA15	BA2	BA24	BA7
BA11	BA16	BA20	BA3	BA8
BA12	BA17	BA21	BA4	BA9
BA13	BA18	BA22	BA5	

Size: 28 polygons.

Data structure:

Field	Data type	Size	Description
Burnd#	A	6	Machine generated unique identifier.
Burnd-id	A	8	User generated identifier; five values are recognized, their information content is unknown.

MHVEG_OLD

Description: Vegetation map encompassing the South ITR restricted air space. Point and arc files need to be rebuilt into a polygon file. Attributes are contained in the point file. Attributes correspond roughly to final ITR values

presented in United States Air Force (1993). The content suggests that this is a provisional map.

Scale: 1:19,000?

Information source: SAIC delineation of vegetative cover using 1983 high-altitude color infrared aerial photography as the base.

Size: 473 points representing polygons.

Data structure (point file):

Field	Data type	Size	Description
Mhveg-old#	A	10	Machine generated unique identifier.
Mhveg-old-id	A	12	User generated identifier; seven values are recognized but have no apparent pattern or information content.
Acre	A	4	Area of polygon associated with the point.
Veg#	A	4	Vegetation code; 58 values are recognized with apparent relation to the codes listed in Table 3.1 of United States Air Force (1993).

MHVEGA

Description: Vegetation map encompassing the Industrial Complex component of the South ITR proposal. Point and arc files need to be rebuilt into a polygon file. Attribute data is contained in the arc file. The polygon file, MHVEGA1, duplicates the MHVEGA arc file but is not attributed. The polygon file, VEG1 contains a single polygon duplicating area perimeter of MHVEGA.

Scale: 1:19,000?

Information source: SAIC delineation of vegetative cover using 1983 high-altitude color infrared aerial photography as the base?

Size: 46 points representing polygons.

Data structure (arc file):

Field	Data type	Size	Description
Mhvega#	A	7	Machine generated unique identifier.
Mhvega-id	A	9	User generated identifier; 73 values are recognized, their relation to other vegetation codes is currently unknown.

MHVEGB

Description: Vegetation map encompassing the Railyard component of the South ITR proposal. Arc and polygon files are present but do not match entirely. The arc file matches MHVEG-OLD. The arc file is attributed, the polygon file is not.

Scale: 1:19,000?

Information source: SAIC delineation of vegetative cover using 1983 high-altitude color infrared aerial photography as the base?

Size: 60 polygons.

Data structure (arc file):

Field	Data type	Size	Description
Mhvegb#	A	7	Machine generated unique identifier.
Mhvegb-id	A	9	User generated identifier; 130 values are recognized, their relation to other vegetation codes is currently unknown.

NVEG

Description: Vegetation map encompassing the North ITR and CTR restricted air space. HEP data presented in Table 3-2 of United States Air Force (1993) is contained within the attributes of the polygon file.

Scale: 1:19,000?

Information source: SAIC delineation of vegetative cover using 1983 high-altitude color infrared aerial photography as the base and subsequent field verification and vegetative sampling.

Size: 696 polygons.

Data structure:

Field	Data type	Size	Description
Nveg#	A	5	Machine generated unique identifier.
Nveg-id	A	7	User generated identifier; 578 values.
Acre	A	4	Area of polygon (acres).
Veg#	A	4	Vegetation codes similar to those listed in Table 3-1 of United States Air Force (1993); 41 values (preliminary?).
Cg	A	2	Community group; six value recognized as identified by United States Air Force (1993).
Commtyp	A	38	Plant community labels; 32 values are recognized.
Comper1	A	23	Percent occupation of first included plant community (labelling conventions follow the Commtyp field).
Comper2	A	12	Percent occupation of second included plant community (labelling conventions follow the Commtyp field).
Comper3	A	14	Percent occupation of third included plant community (labelling conventions follow the Commtyp field).

Field	Data type	Size	Description
Nveg#	A	5	Machine generated unique identifier.
Perbare	A	7	Characteristic percent cover of bare ground within mapping unit.
Prerock	A	7	Characteristic percent cover of rock within mapping unit.
Preshrub	A	8	Characteristic percent cover of shrubs within mapping unit.
Presage	A	7	Characteristic percent cover of sagebrush within mapping unit.
Cmshrub	A	7	Characteristic heigth (cm) of shrubs within mapping unit.
Cmsage	A	6	Characteristic heigth (cm) of sagebrush within mapping unit.
Cmherb	A	6	Characteristic heigth (cm) of herbs within mapping unit.
Cmgrass	A	7	Characteristic heigth (cm) of grass within mapping unit.
Putr	A	4	Characteristic percent cover of <i>Purshia tridentata</i> (PUTR) within mapping unit.
Jusc	A	4	Characteristic percent cover of <i>Juniperus scopulorum</i> (JUSC, this is likely actually <i>Juniperus occidentalis</i>) within mapping unit.
Perbare2	A	8	Characteristic percent cover of bare ground within first included plant community of mapping unit.
Prerock2	A	8	Characteristic percent cover of rock within first included plant community of mapping unit.
Preshrub2	A	9	Characteristic percent cover of shrubs within first included plant community of mapping unit.
Presage2	A	8	Characteristic percent cover of sage brush within first included plant community of mapping unit.
Cmshrub2	A	8	Characteristic heigth (cm) of shrubs within first included plant community of mapping unit.
Cmsage2	A	7	Characteristic heigth (cm) of sagebrush within first included plant community of mapping unit.
Cmherb2	A	7	Characteristic heigth (cm) of herbs within first included plant community of mapping unit.
Cmgrass2	A	8	Characteristic heigth (cm) of grass within first included plant community of mapping unit.
Putr2	A	5	Characteristic percent cover of PUTR within first included plant community of mapping unit.
Jusc2	A	5	Characteristic percent cover of JUSC within first included plant community of mapping unit.

Field	Data type	Size	Description
Nveg#	A	5	Machine generated unique identifier.
Perbare3	A	8	Characteristic percent cover of bare ground within second included plant community of mapping unit.
Prerock3	A	8	Characteristic percent cover of rock within second included plant community of mapping unit.
Preshrub3	A	9	Characteristic percent cover of shrubs within second included plant community of mapping unit.
Presage3	A	8	Characteristic percent cover of sage brush within second included plant community of mapping unit.
Cmshrub3	A	8	Characteristic heighth (cm) of shrubs within second included plant community of mapping unit.
Cmsage3	A	7	Characteristic heighth (cm) of sagebrush within second included plant community of mapping unit.
Cmherb3	A	7	Characteristic heighth (cm) of herbs within second included plant community of mapping unit.
Cmgrass3	A	8	Characteristic heighth (cm) of grass within second included plant community of mapping unit.
Putr3	A	5	Characteristic percent cover of PUTR within second included plant community of mapping unit.
Jusc3	A	5	Characteristic percent cover of JUSC within second included plant community of mapping unit.
Symbol	A	6	Two values are recognize; their significance is unknown.
Type	A	51	One value is recognized: Sage Grouse Habitat With\ a Suitability Index > 0.80. The relation of this to other values is not known (perhaps related to the subsequent percent value).
Precent	A	7	Percent. The relation of this to other values is not known.
Freq	A	4	Frequency. The relation of this to other values is not known.
Veg-code	A	8	Vegetation code; 25 values as reported in Table 3-1 of United States Air Force (1993).

SVEG

Description: Vegetation map encompassing the South ITR restricted air space. HEP data presented in Table 3-2 of United States Air Force (1993) is contained within the attributes of the polygon file.

Scale: 1:19,000.

Information source: SAIC delineation of vegetative cover using 1983 high-altitude color infrared aerial photography

as the base and subsequent field verification and vegetative sampling.

Size: 485 polygons.

Data structure: The data structure is identical to NVEG (listed above) with the exception that the field, Type, is not included.

VEGALL

Description: Vegetation map encompassing the North ITR and CTR restricted air space. Point and arc files need to be rebuilt into a polygon file. Attributes are contained in the point file. Attributes correspond roughly to final ITR values presented in United States Air Force (1993). The content suggests that this is a provisional map.

Scale: 1:19,000?

Information source: SAIC delineation of vegetative cover using 1983 high-altitude color infrared aerial photography as the base?

Size: 576 points representing polygons.

Data structure (point file):

Field	Data type	Size	Description
Vegall#	A	10	Machine generated unique identifier.
Vegall-id	A	12	User generated identifier; 45 values are recognized but have no apparent pattern or information content.
Acre	A	4	Area of polygon associated with the point.
Veg#	A	4	Vegetation code; 9 points are attributed with apparent relation to the codes listed in Table 3.1 of United States Air Force (1993).

WETLAND

Description: Wetland delineation encompassing the North ITR, South ITR, and CTR study areas.

Scale: 1:24,000

Information source: SAIC digitization of NWI maps.

Size: 61 polygons.

Data structure:

Field	Data type	Size	Description
Wetland#	A	8	Machine generated unique identifier.
Wetland-id	A	10	User generated identifier with no apparent pattern or information content.

WETLAND1

Description: Wetland points encompassing the North ITR, South ITR, and CTR study areas.

Scale: 1:24,000.

Information source: SAIC digitization of NWI maps.

Size: 276 points.

Data structure:

Field	Data type	Size	Description
Wetland1#	A	8	Machine generated unique identifier.
Wetland1-id	A	10	User generated identifier with no apparent pattern or information content.